RHODE ISLAND
DEPARTMENT OF HEALTH

ACCREDITED HEALTH DEPARTMENT
PHAB
Advancing public health performance
PUBLIC HEALTH ACCREDITATION BOARD

Electronic Diagnostic Audiology Reporting using HL7 Standards

March 11, 2025

Pittsburgh, PA

Learning Objectives

Learning Objective 1:
Participants will be able to describe the development of the HL7 Diagnostic Audiology Reporting standards and how to access it.

Learning Objective 2:
Participants will learn about the process and challenges associated with establishing electronic audiology reporting in Rhode Island.

Learning Objective 3:
Participants will understand the current progress toward electronic reporting from two major hospital audiology clinics.

Development of HL7 Diagnostic Audiology Reporting Standards - Need

- Lost to documentation for diagnostics is challenging for EHDI programs.
- Electronic transfer from EHRs to EHDI Information Systems (EHDI-IS) could:
  - Eliminate duplicative reporting (EHR and EHDI) for audiologists.
  - Improve timeliness of reporting.
  - Improve completeness of reporting.

Development of HL7 Diagnostic Audiology Reporting Standards - Need

- HL7 Standards existed for newborn hearing screening but not for diagnostics.
- EHRs need standards so that they don't have to develop different data transfers for different constituents (like EHDI).

Development of HL7 Diagnostic Audiology Reporting Standards - Process

- National Diagnostic Audiology Reporting Work Group
  - Core Team (CDC EHDI- Xidong Deng, State EHDI – RI and Oregon, PHII – HIT standards Lura Daussat, and HL7 Public Health Work group – Craig Newman)

- Developed interoperability standards to exchange diagnostic audiology data between electronic health record systems and state/territorial EHDI information systems.

Development of HL7 Diagnostic Audiology Reporting Standards - Process

- Submitted draft HL7 Diagnostic Audiology Reporting Implementation Guide to the HL7 Public Health Workgroup
  - Approved as a “Standard for Trial Use”
- Trial period – try the guide and provide feedback to HL7
  - RI EHDI is working on trial
- https://www.hl7.org/implement/standards/product_brief.cfm?product_id=620

Engage Partners

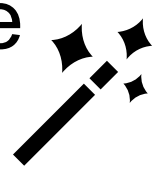
- Talked to potential audiology partners
  - Lifespan
  - Care New England
  - University Otolaryngology
  - Concerns that a future EHR interface could negate all this work and/or they would have to pay for an upgrade/module in EPIC for diagnostic audiology reporting
- Identified and contacted the EHR Partners
  - EPIC
    - Not planning an upgrade/add-on module

  - ModMed

Audiology Clinic #1 – Hospital Based

Care New England

- Requested project through IT governance
  - Took quite a while to get approved and scheduled
- Created a flowsheet in EPIC that modeled the DAR workflow at Care New England
  - Didn't require any new module in EPIC
- Connected the flowsheet to an outbound HL7 interface using existing CloverLeaf software (the magic part)



- Worked together to agree on a transport method
- Sent a successful test message which allowed RIEHDI to create an inbound HL7 interface

Audiology Clinic #2 – Hospital Based

Lifespan

- Requested project through IT governance in March 2023
  - Still waiting to be scheduled!!!
  - Hospital IT capacity is the biggest challenge

Audiology Clinic #3 – Community Based

University Otolaryngology

- EHR Vendor – ModMed
  - Met with vendor to describe project
  - Expressed interest
    - Preference for FHIR
  - Reviewed several options
  - Currently exploring a FHIR based API

Development of Inbound HL7 Diagnostic Audiology Reporting Interface

- Built parser using “HAPI” Open Source HL7 Parser Software
  - Similar to what we do for immunizations
- Used CDC SOAP standard for Transport and Authentication
  - Already used by partners for immunizations
- Patient Matching
  - Does not require an exact match
  - Similar to what we do for immunizations
- Required fields
  - Patient, Audiologist, Visit Date, Tests Performed, Diagnosis, **Left & Right Degree and Type of Loss**

Sample Message

MSH|^~\&||RI88200710|||20240412142947|186|ORU^R01^ORU_R01|26|T|2.3||||||||||

EVN|R01|20230809104508|||186^AUDIOLOGIST^JOHN^J^^^^CNE^^^^134TH

PID|1|E4775^^^EPIC^MRN~009201968^^^KMRN^KMRN~008411305^^^WMRN^WMRN~100736066^^^CMRN^CMRN~9201968^^^^~8411305^^^^|E4775^^^EPIC^MRN~009201968^^^KMRN^KMRN~008411305^^^WMRN^WMRN~100736066^^^CMRN^CMRN~9201968^^^^~8411305^^^^||PIPER^PETER||19830122|M||CHINESE|22 PICKLE LANE^^PECKVILLE^PA^45678^USA^P^^LAWRENCE|LAWRENCE|(724)567-1235^P^PH||ENGLISH|MARRIED|||666-66-6666|||PUERTO RICAN|||||||N|||||||

PV1|1||^^^134TH^^^^^^^|||||||||||||||125931|||||||||||||||||||||||||||||

OBR|1||161652023080910430 0||||20230809104300

OBX|1|ST|1^Reason for Visit^OAUD||Failed newborn screen||||||F|||20230809104300||186^AUDIOLOGIST^JOHN^J^||

OBX|2|ST|3^Test Performed^OAUD||ABR||||||F|||20230809104300||186^AUDIOLOGIST^JOHN^J^||

OBX|3|ST|4^Primary Diagnosis (To be reflective of the primary hearing-related billing diagnosis)^OAUD||Sensorineural Hearing Loss, Unilateral, Left Ear, Restricted Hearing Contralateral H90.A22||||||F|||20230809104300||186^AUDIOLOGIST^JOHN^J^||

KIDSNET: Diagnostic Audiology

Detailed Audiological Diagnostic Information

Date Tested:	**11/23/2022**	Audiologist:	**CHRISTEN KELLY**
Primary diagnosis:	**Sensorineural hearing loss, bilateral (H90.3)**		
Diagnosis Left:	**SENSORINEURAL**	Diagnosis Right:	**SENSORINEURAL**
Degree Left:	**MODERATE**	Degree Right:	**MODERATE**
Reason for Visit:	**Failed newborn screen**		
Risk Factors:			
Tests Performed:			
Audiological Recommendation/ Referral(s) made:	**Re-evaluation: Specific Date (01/04/2023)**		
Amplification:			
Hearing Aid (L):	**Date started: 11/23/2022**	**Discontinued date:**	
Hearing Aid (R):	**Date started: 11/23/2022**	**Discontinued date:**	
Cochlear Implant (L):			
Cochlear Implant (R):			
Secondary ICD10:			

Summary of Challenges

- Final diagnosis type and degree by ear are not a required fields in the HL7 Draft for Trial Use
  - Test messages were not complete (need to establish local guidelines that require type and degree)
- Partners that are not already sending HL7 to RIDOH
  - Hospitals
    - Are sending HL7 Immunization records which we could build on
  - Private Audiology EHRs

Current Status

- Care New England
  - Waiting to re-establish transport
    - Competing with inpatient Cerner to EPIC transition
- Lifespan
  - Waiting for project to be scheduled by IT
    - Competing with name change in parent company
- University Otolaryngology
  - Exploring FHIR API with ModMed

Questions?

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